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# PROGRESS

*of the*

## Barberry Eradication Campaign

*in*

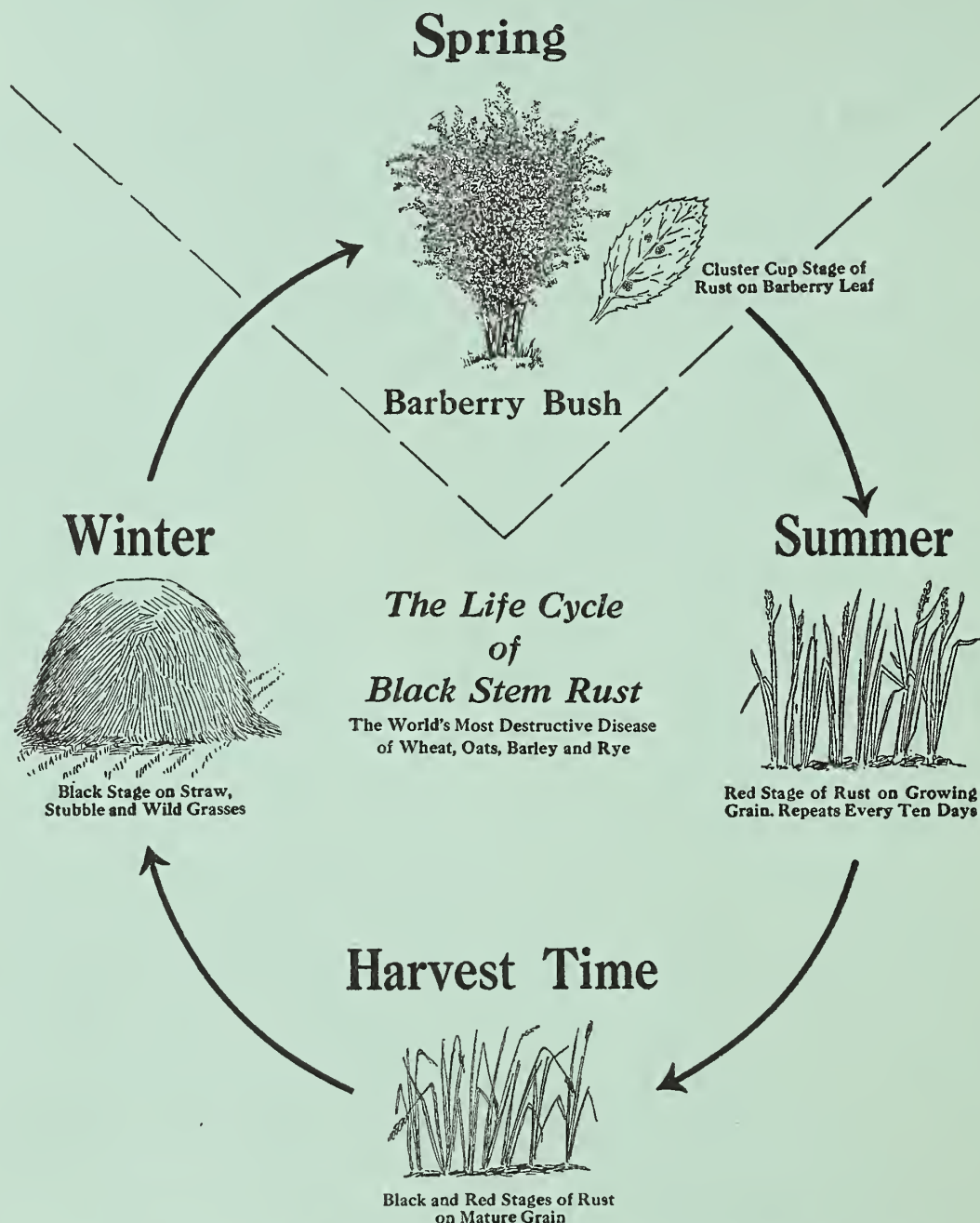
Montana in 1930



*Black Stem Rust Spread From This Common Barberry Bush  
To Near-by Grain Fields Causing Severe Damage*

***Barberry Eradication Pays***

# Remove the Barberry and Break the Rust Cycle



All Common Barberries act as starting points for Black Stem Rust early each spring. By destroying the barberry the early spring source of black stem rust is eliminated. The Common Barberry provides a means to bridge the gap between the black stage on grain in the fall and the red stage of the rust on grains and grasses the following spring.

**BOOST BARBERRY ERADICATION—A PRACTICAL RUST CONTROL MEASURE**

PROGRESS REPORT  
of the  
BARBERRY ERADICATION CAMPAIGN  
IN MONTANA  
1930

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## BARBERRY BRIEFS

### History at a Glance

The COMMON BARBERRY bush originated in Asia. Because of the medicinal value of its roots, the seeds were brought to Europe.

The seeds were planted, and the bush rapidly became popular. It was soon carried to the British Isles.

These bushes had many uses: Wines, pies, and jellies were made from the berries.

A yellow dye was obtained from the roots. Red ink was made by the addition of alum.

When the roots were boiled the water was used as a gargle for sore throats.

Vast hedges were used on the feudal estates to divide fields and turn cattle.

As early as 1600 black stem rust epidemics were so severe in some sections that small grain growing was discontinued.

Finally, in 1660 a law was passed in Rouen, France, prohibiting the growing of barberry bushes near grain fields.

However, barberry bushes continued to be planted in many regions.

At the time of the great land reforms in 1700 barberry bushes were the most popular hedge plants for dividing the fields

Closely following this widespread use of the barberry, came black stem rust.

The "Barberry War" became serious in 1800. Groups of farmers destroyed large hedges by mob force.

De Bary, a German scientist, definitely proved that the barberry spreads black stem rust, 1865.

He showed that the stem rust spent part of its life on the common barberry.

The "Barberry War" continued. In 1903 Denmark controlled black stem rust by a systematic eradication of its barberries.

SINCE THAT TIME DENMARK HAS BEEN FREE FROM DEVASTATING EPIDEMICS OF BLACK STEM RUST

## BARBERRY BRIEFS

### The Barberry Comes to America

The early colonists to America brought berries and planted them because of the many uses for the common barberry.

As the Middle West was settled nurseries sold common barberries for ornamental and hedge plants.

By 1700 there were many bushes in New England. And with the barberries came black stem rust.

A serious rust epidemic destroyed many fields of grain in 1904.

The rust became so bad that in 1726 Connecticut passed a law against the common barberry, followed by Massachusetts in 1755.

It was conservatively estimated in 1916 that losses to wheat from stem rust amounted to approximately 280 million bushels in the United States and Canada.

These laws were not rigidly enforced. The Western settlers carried the barberries with them.

Grain farmers everywhere demanded that "something be done to control black stem rust."

### The Barberry Eradication Campaign 1917 - 1930

The answer to the cry for relief was immediate.

The next year, 1917, the North Dakota Legislature appropriated \$5,000 to destroy barberries in that State.

In 1918 the United States Department of Agriculture extended the campaign into 12 other North-Central wheat growing States.

These States are: Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming.

In 1922 business interests of the Northwest organized the Conference for the Prevention of Grain Rust with headquarters in Minneapolis, to aid the barberry campaign.

In many States the legislatures have appropriated funds to aid the Federal Government.

Since 1918 more than 18 million bushes have been destroyed in the campaign area, and more than 34,000 in Montana.

During this time losses from black stem rust have steadily been reduced.

**BARBERRY ERADICATION PAYS!**



# Black Stem Rust

spreads from Common Barberry Bushes  
to Wheat, Oats, Barley, Rye and many  
Grasses



Black stem rust of small grains is caused by a tiny parasitic plant. In the Northern States it lives for a time each spring on the leaves of common barberry bushes. The dust-like spores of the rust are spread by the wind for miles from barberry bushes to grain fields and from one grain field to another. Warm, moist weather aids the rapid development and spread of stem rust, just as the growth of corn, wheat, or other crops is affected by favorable weather conditions. Destroy common barberry bushes and reduce losses from stem rust.

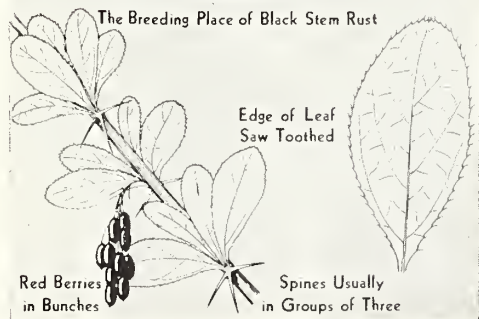
# Learn to Know Common Barberry



## COMMON BARBERRY

HARMFUL

The Breeding Place of Black Stem Rust



Edge of Leaf  
Saw Toothed

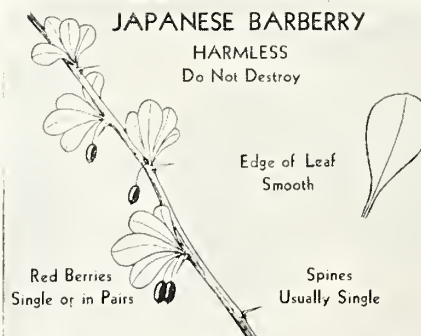
Red Berries  
in Bunches

Spines Usually  
in Groups of Three

## JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Edge of Leaf  
Smooth

Red Berries  
Single or in Pairs

Spines  
Usually Single

Report common barberry bushes you may find, to the Barberry Eradication Office in your State, your Agricultural College, your State Department of Agriculture, or the Barberry Eradication Office, United States Department of Agriculture, Washington, D.C.



## WHY

### BARBERRY ERADICATION

#### IN MONTANA

Montana is fortunate that black stem rust does not destroy as much of its grain as it does in many other States. Her eastern neighbors, especially North and South Dakota, have suffered great losses from this disease in the past. Nevertheless, grains, particularly in the eastern part of the State, often have been seriously damaged.

During the past year, stem rust was negligible in most parts of the State partly due to the very dry weather which prevailed. With more favorable moisture and temperature conditions, the presence of barberry bushes may become the limiting factor.

The common barberry spreads black stem rust. Hundreds of experiments have proved that barberry eradication is scientifically correct. Experience has proved that the campaign is practical.

Recent discoveries have revealed that existing forms of rust crossbreed on the barberry and produce new forms. These often can attack wheats that were previously resistant to rust. So long as barberry bushes exist in a region, there is a probability that rust will develop.

Barberry eradication is not only a control measure for the stem rust now in Montana, but

BARBERRY ERADICATION IS MONTANA'S INSURANCE AGAINST RUST LOSSES IN THE FUTURE.

#### ORGANIZATION OF PROJECT

##### Personnel

The barberry eradication campaign is conducted by the United States Department of Agriculture in cooperation with the Agricultural College, Experiment Station, Extension Division, State

Department of Agriculture, and other State and civil organizations. To provide close supervision of field activities the work in Montana and North Dakota is conducted under a District Leader who is aided by an assistant leader in each State. Permanent headquarters for the campaign in Montana are maintained at Montana State College, Bozeman, while the District Office is at Fargo, North Dakota.

Prof. H. E. Morris, plant pathologist for the Experiment Station and Extension Division at the Montana State College is a collaborator of the Bureau of Plant Industry and a cooperator in barberry eradication. Thirteen field agents were employed for an average of four months during the past summer.

#### Cooperating Agencies

Realizing the value of the barberry eradication project and convinced of its effectiveness in controlling black stem rust, many agricultural and non-agricultural organizations throughout the Northwest have given their support to the campaign.

In 1922, agricultural and allied interests of the Northwest organized the Conference for the Prevention of Grain Rust with headquarters in Minneapolis, Minnesota, for the sole purpose of aiding this project. It has rendered invaluable assistance in varying phases of the work.

With the cooperation of the State Department of Public Instruction, educational work is being carried on in schools of the State.

#### Financing

The project is financed by the Federal Government and State agencies.

## SUMMARY OF ACTIVITIES, 1930

### Survey and Eradication

The survey and eradication activities in Montana (i.e. searching for and destroying bushes) were carried on in Stillwater, Carbon, Yellowstone, and Fergus Counties by 12 men under the supervision of the District Leader and the assistant leader.

During their field work the agents found and destroyed 335 bushes, sprouting bushes, and seedlings on 21 properties. The fact that fewer bushes were found this summer than during the average year is accounted for by the nature of the region in which survey was being conducted. A large share of the time was spent in searching for escaped barberries growing in native timber along rivers, which necessitates very slow and intensive work.

Bushes were killed by the application of salt whenever it was possible to do so without harm to near-by valuable shrubbery. Otherwise, they were destroyed by digging.

### Education and Publicity

As the remaining barberries become fewer in number, the need for widespread cooperation on the part of the public becomes more apparent. Reports of suspected bushes and localities where rust is prevalent are of great value. Because of this situation greater efforts are being made each year to bring the project before the general public. These educational and publicity activities are designed to explain the principle of the campaign, teach the identification of the common barberry bush and its relationship to black stem rust, stimulate the public to cooperate, and keep it informed as to the progress being made. This work is carried on through the newspapers, by child education in the schools, fair demonstrations, window displays, motion pictures, and lantern slides.



## Education in Schools

Each year approximately one-fourth of the schools in the State are supplied with educational materials and lesson plans to be used in teaching the problem of stem rust control by barberry eradication. Laboratory slides, and instructions for laboratory exercises have been supplied to several hundred schools. Attractive files for this material have been provided by the Conference for the Prevention of Grain Rust.

To stimulate greater interest on the part of the school children, an organization known as the National Rust Busters Club has been formed in the campaign area. As rapidly as possible these clubs are being established in Montana. All grade school children are eligible for membership which carries with it a special Rust Busters button. The pupils are taught to recognize barberry bushes and where to look for them. To those members who find bushes the national organization awards an attractive bronze medal badge bearing the student's name.

Montana's first Rust Buster Club was organized in Dawson County on November 7, when agents began their organization work there this fall.

The campaign is indebted to the State Superintendent of Public Instruction, the county superintendents, and the many teachers for their splendid cooperation which has made this work so effective.

## The Newspapers

News stories explaining the campaign and following its progress have been supplied to weekly and daily newspapers throughout the State. This has been accomplished by direct contact and through the news service of the Department of Publications, Montana State College, Bozeman.

## Demonstrations and Displays

A demonstration explaining identification of the barberry and its relationship to black stem rust was placed at the larger fairs held throughout the State during the summer and fall. Small window displays were used in the towns where field agents were stationed.

# COMMON SALT KILLS BARBERRY BUSHES AND PREVENTS SPROUTING



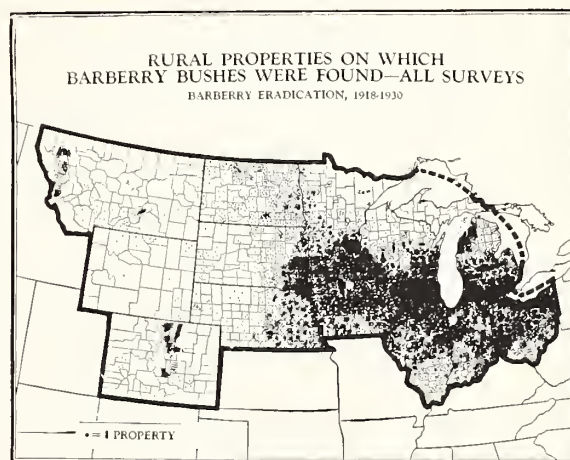
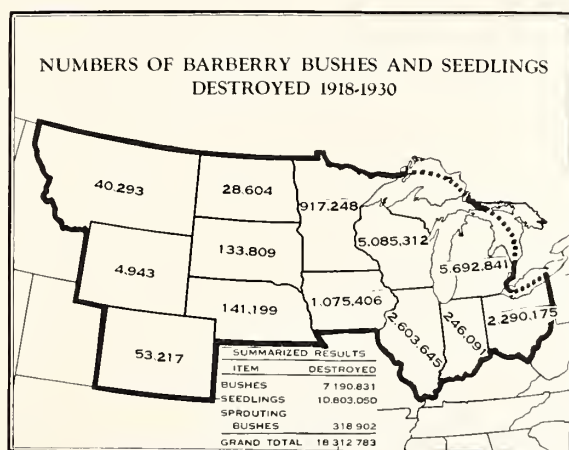
## SALTING A BUSH



## SPROUTS FROM DUG BUSH

Birds, animals and man chiefly are responsible for the wide distribution of the seeds of common barberries. Every fence row, thicket, pasture or wood is a possible hiding place for these bushes.

Every man, woman and child should consider it his or her duty to look for and report common barberry bushes.



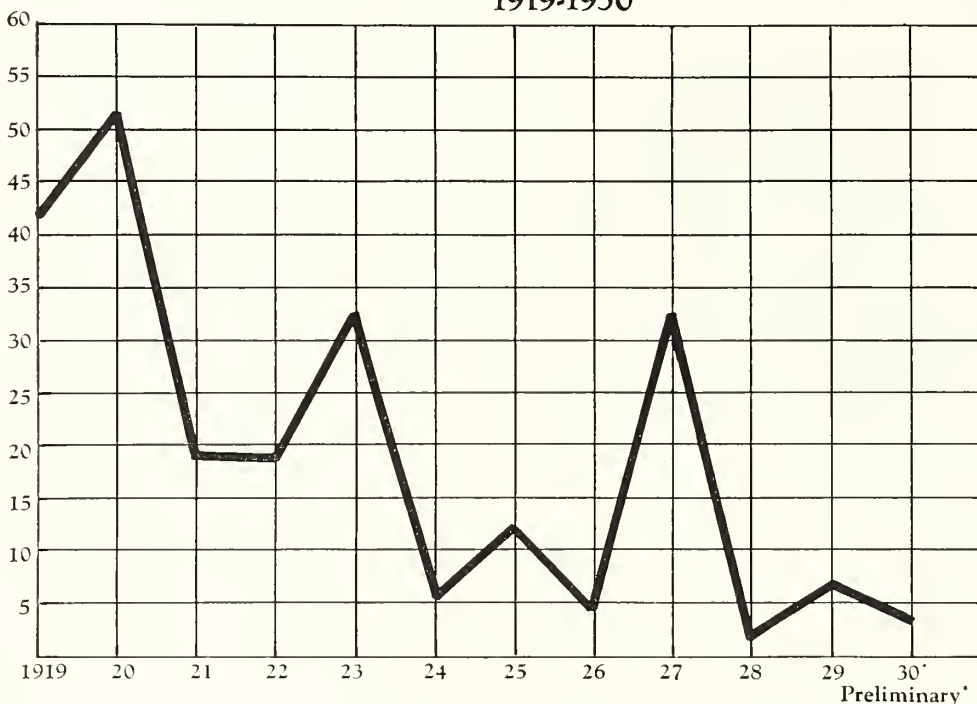
More than 18 million sources of black stem rust  
were removed 1918-30

Prepared by the Rust Prevention Association, 300 Lewis Building, Minneapolis, Minn., in co-operation with Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D.C.

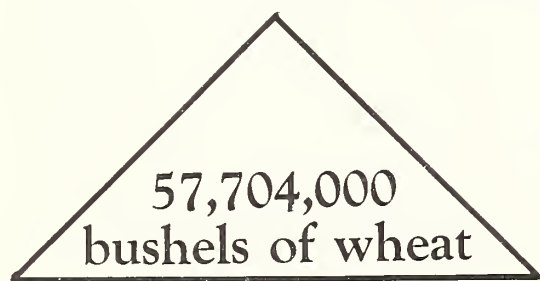
# Barberry Eradication Pays

In Millions  
of Bushels

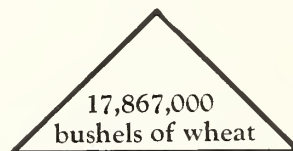
Wheat losses in Barberry Eradication Area  
1919-1930



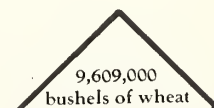
The losses to small grain crops caused by black stem rust have been reduced since the beginning of the barberry eradication campaign in 1918. The breeding of rust-resistant varieties, the use of early maturing varieties, and the sowing of crops early, have aided in this reduction.



Average annual loss  
five-year period  
1916-1920



Average annual loss  
five-year period  
1921-1925



Average annual loss  
five-year period  
1926-1930

Millions of bushels of oats, barley and rye also are  
damaged each year by black stem rust

Rust shriveled grain always is discounted

Destroy all Common Barberries—Reduce Losses from Stem Rust.  
Receive the Highest Available Price for Grain.



A two-reel motion picture and lantern slides on the project have been available to the public through the Extension Department of the State College.

### Investigations

Each year the State office keeps a record of local rust epidemics that have occurred during the summer. When the recurrence of these rust spots indicates the presence of barberries, agents are detailed to intensive survey of the suspected region.

During the past few years many of the barberries that have been found were bearing fruit. In most of these cases the seeds have been scattered and seedlings have grown up, giving rise to a problem of escaped bushes. Experiments with the growth of seedlings under natural environmental conditions are conducted. By these it is hoped to gain more definite information regarding the probability of escaped areas in the varying regions of Montana.

### THE FUTURE

#### All Known Methods of Rust Control Must be Employed

While barberry eradication is of first importance in the control of black stem rust, there are several methods known to be effective in lessening the damage from this disease. Early sowing of grain, proper preparation of the seed bed, avoidance of low, poorly drained land, proper use of fertilizer, - in fact, anything that promotes early ripening, will reduce the danger from black stem rust.

Certain varieties of wheat, oats, and barley, which are more disease resistant than others, have been produced by plant breeders. Whenever these varieties meet the requirements of a given region and are desirable from yield, milling quality, and resistance to other cereal diseases, they should be substituted for the less satisfactory varieties.

#### New Strains of Destructive Black Stem Rust Develop on the Common Barberry

Entirely new strains or forms of black stem rust may be produced from year to year on the common barberry. This discovery

was made recently by the Dominion Rust Research Laboratories at Winnipeg and by Dr. E. C. Stakman and his coworkers at the University of Minnesota, the two groups conducting independent research. The certainty that new forms of this dangerous disease may appear suddenly makes the eradication of the common barberry all the more imperative, since it is on the barberry alone that the new forms occur.

The new and apparently resistant varieties of grains are not safe with common barberries near. If for no other reason than to protect the new kinds of super-wheat now in the process of development, all common barberry bushes should be destroyed.

#### BARBERRY ERADICATION MUST BE CONTINUED

Common barberries spread black stem rust, - there is no doubt about it.

Black stem rust always has followed inevitably upon the distribution of common barberries.

Montana has comparatively few barberries. Approximately 34,000 have been destroyed to date - and rust has not been as serious as in some other States.

However, many bushes have escaped cultivation and are now growing in native timber and river underbrush where the seeds were scattered by birds.

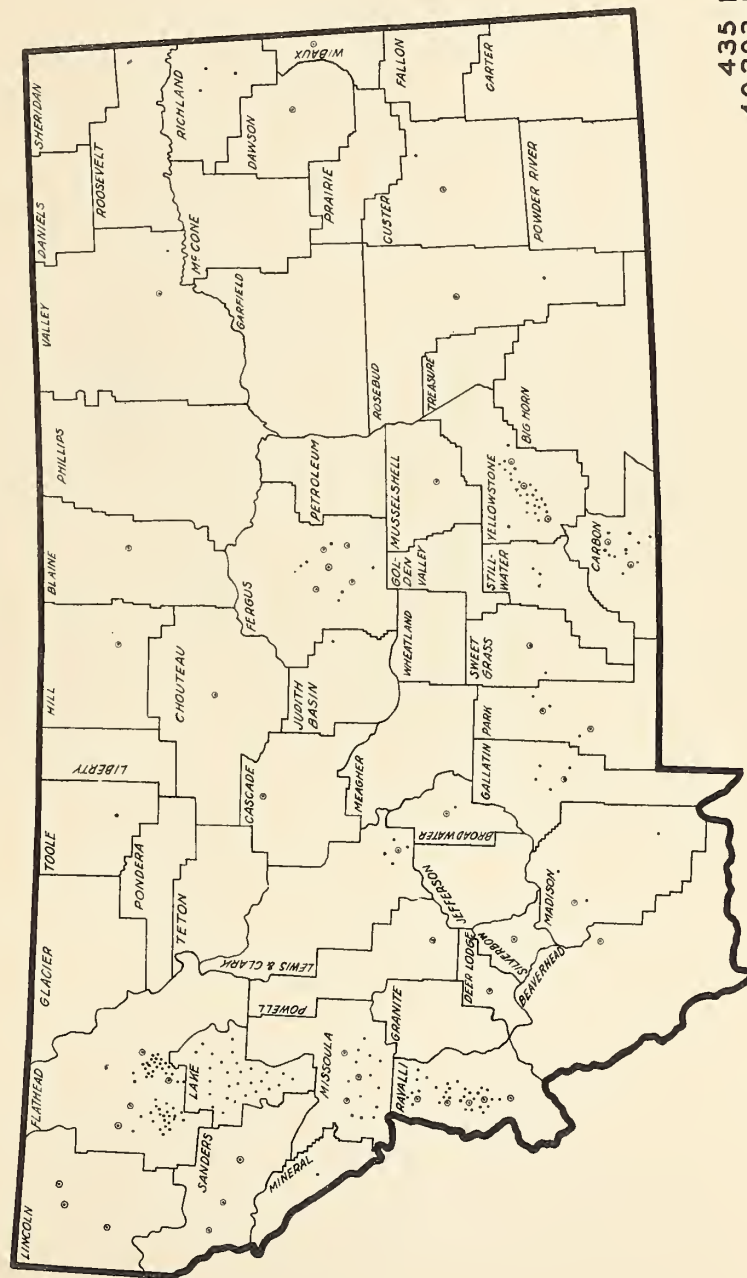
This situation must not be allowed to continue. It is important that EXISTING BUSHES BE DESTROYED.

The successful completion of the present barberry eradication campaign will (1) CONTROL THE RUST THAT NOW EXISTS IN SOME PARTS OF MONTANA, and (2) PROVIDE INSURANCE AGAINST SERIOUS RUST LOSSES IN THE FUTURE.



# PROPERTIES HAVING BARBERRY BUSHES 1918-1930

## MONTANA



435 PROPERTIES  
40,293 BUSHES

*FARMS HAVING BARBERRY BUSHES*  
*TOWNS HAVING BARBERRY BUSHES*

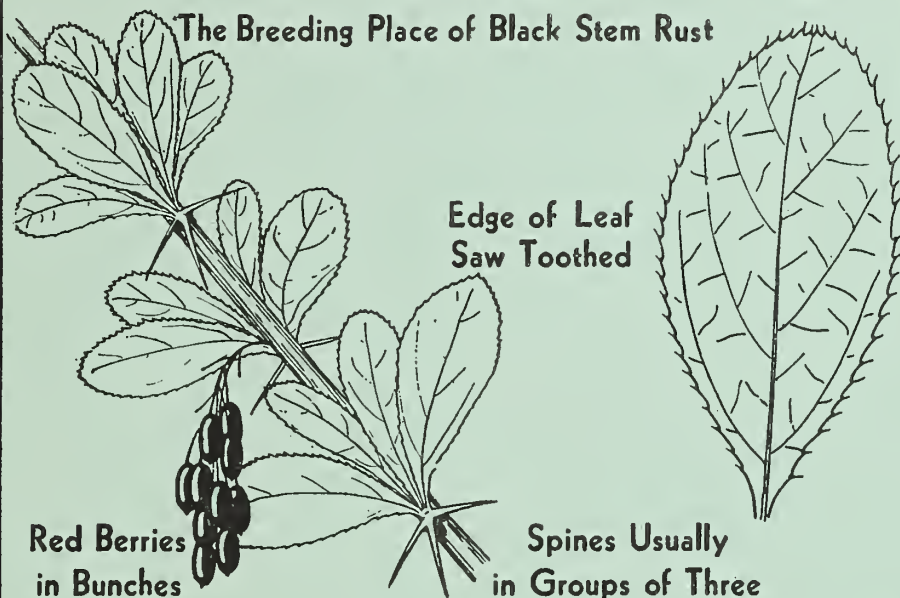


# Common Barberry Spreads Black Stem Rust

## COMMON BARBERRY

HARMFUL

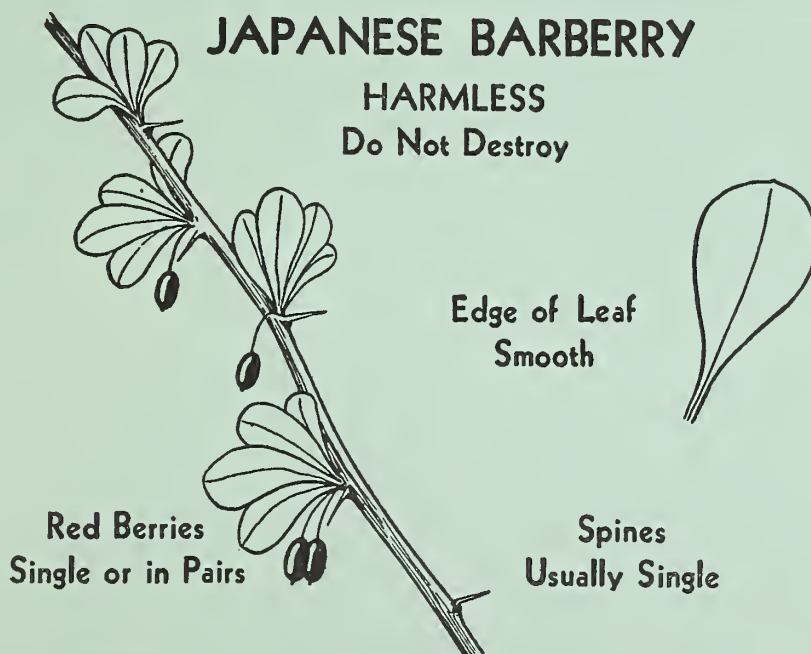
The Breeding Place of Black Stem Rust



## JAPANESE BARBERRY

HARMLESS

Do Not Destroy



**Look For and Report All Common Barberry Bushes**  
*To the State Leader of Barberry Eradication, in care of your State Department of Agriculture or your State Agricultural College.*

# Common Barberry Bushes

*spread*

## *Black Stem Rust*

*to*

WHEAT, OATS,  
BARLEY, RYE,  
*and* Many Wild  
Grasses

**T**HIS Progress Report is prepared and printed by the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. The cover is furnished by the Conference for the Prevention of Grain Rust, 300 Lewis Building, Minneapolis, Minnesota.